COLUMBIA RIVER TECHNICAL MANAGEMENT TEAM

June 17, 2015
Facilitation Team's Summary
Facilitator, Emily Plummer; Notes, Tory Hines DS Consulting

The following Facilitator's Summary is intended to capture basic discussion, decisions and actions, as well as point out future actions or issues that may need further discussion at upcoming meetings. These notes are not intended to be the "record" of the meeting, only a reminder for TMT members.

Review of Meeting Minutes

The May 20th and May 27th Official Minutes and Facilitator's Summary were approved. TMT members will review and provide suggested edits to the June 10th minutes and summary prior to the June 24th TMT meeting.

Treaty Fishing SOR 2015-C5

Kyle Dittmer, CRITFC, provided an overview of the Treaty Fishing SOR on behalf of the Columbia River Inter-Tribal Fish Commission members. SOR 2015-C5 requests a 1.5 foot band soft constraint for the Bonneville, The Dalles and John Day pools during the treaty fishing period, beginning on Tuesday, June 16, 2015 0600 hours through Friday, June 19, 2015, 1800 hours. Additionally, the SOR requests the same operation was requested for June 22 through June 25, and June 29 through July 2. Kyle shared that Upper Columbia Chinook forecast is strong and the Sockeye forecast is above normal. The June 4th net count showed 294 nets total, with 124 in the Bonneville pool (42%), 59 nets at The Dalles (20%), and 111 nets at John Day (38%). Karl Kanbergs, COE-NWD, noted that the Port of Hood River requested a low Bonneville pool in order for the sand bar to remain exposed for the 4th of July weekend. He assured that the Corps will work with CRITFC to provide a steady transition. Doug Baus, COE-NWD, extended appreciation to CRITFC for providing advanced notice of the three separate SOR operations and asked for advanced notice of any needed modifications.

- **ACTION**: The Corps is currently implementing and will continue to implement SOR 2015-C5, holding a 1.5ft band at the BON, TDA, and JDA pools from June 16 at 0600 hours to June 19 at 1800 hours; June 22 at 0600 hours through June 25 at 1800 hours; and June 29 at 0600 hours through July 2 at 1800 hours.

Dworshak / Lower Granite Water Temperature

Steve Hall, USACE-Walla Walla, provided an update on Dworshak and Lower Granite water temperatures. He noted that current conditions are approaching 68 degrees Fahrenheit and thus the project began temperature augmentation operations on Tuesday night, releasing cooler water from DWR into the Lower Granite pool. Modeling indicates that if DWR discharge was not increased by today, temperature exceedances would occur later this week. The Corps increased discharge from 3kcfs out of Dworshak to full load on unit 3 at 5.3kcfs. While modeling indicates cooler temperatures over the next few days, the Corps is planning to hold the current release in anticipation of warmer weather over the weekend. Steve noted that maintaining the operation at 5.3kcfs should be sufficient to stay below 68 degrees Fahrenheit in the Lower Granite tailwater through early next week. Steve continued that going into the operation, the pool is half a foot down and it is expected to draft to approximately 5ft below full by the end of June. Charles Morrill, WA, noted that the temperature string data show temperatures 7 degrees Celsius warmer than this time last year.

Joe Skalicky, USFWS, asked whether modeling was available to determine when cool water will run out. Steve stated a predictive water temperature model cannot be created that far in advance, as the model requires a current weather forecast. That being said, Steve can and will provide modelling to forecast water volumes moving forward.

Steve asked for input from the Salmon Managers regarding their preference in regards to how to manage the remaining water in this low water year. He noted that in previous years the goal was to keep temperatures at Lower Granite tailwater between 66.5 degrees and 67 degrees Fahrenheit to provide a slight buffer to the 68 degree threshold, however, doing so this year will limit available remaining augmentation water come the end of July. He asked for input as to what the operation should look like through August. Steve noted some possibilities, including holding closer to the target elevation and accepting minor exceedances while preserving water for later, or keeping the 1-1.5 degree buffer in order to minimize exceedances now at the expense of water temperatures later in August. Charles Morrill asked if the buffer is reduced and exceedances occur, what volume of water will be saved? Steve stated that if 12-14kcfs is discharged, temperatures will stay below 68 degrees Fahrenheit; if discharge is at 10kcfs then water temperatures will likely rise a few degrees, but this will allow the water to be stretched further into the summer.

Russ Kiefer, ID, noted that from Idaho's perspective, it is prudent to continue to manage the operation with a buffer through the majority of adult Sockeye migration. He continued that it is still early to predict weather and inflows, by mid-July data will be available to make a more informed decision. Paul thanked Steve for keeping temperatures under control and agreed with Russ as to continuing with a buffer until mid-July. Joe Skalicky also agreed to move forward and operate with the buffer; and in the coming weeks reassess if it is necessary to operate without the buffer. Kyle Dittmer noted that given the warm winter temperatures this year, a moderately warm summer will still bring temperatures above normal.

Steve concluded that the Corps is currently modeling running 5.3kcfs outflows through June 25th, with an increase to 7.5kcfs through the July 4th weekend, followed by an increase to 12kcfs for the rest of July. This would result in drafting DWR to approximately 1555 ft. by the end of July. Then operating at full powerhouse (9.7 kcfs) for the month of August would result in drafting DWR to 1535 ft. on approximately August 18.

Operations Review

Reservoirs: Mary Mellema, BOR, reported on Reclamation projects:

- Grand Coulee elevation was 1,273.1ft and is continuing to fill.
- Hungry Horse elevation was 3,549.59ft with 2.5kcfs outflow and inflows at 3.7kcfs.

Lisa Wright, COE-NWD, reported on Corps projects:

- Libby was at elevation 2,440.2ft, with 17.4kcfs inflow and 12kcfs outflow.
- Albeni Falls was at elevation 2062.2ft., with 26.8kcfs inflow and 26.3kcfs outflow.
- Dworshak was at elevation 1,599.6ft with 2.4kcfs inflow and 3.5kcfs outflow.
- Lower Granite average outflow was 35.4kcfs.
- Bonneville average outflow was 172.3kcfs.
- McNary average outflow was 173.7kcfs.

Doug Baus, COE-NWD followed up with TMT on the email notification sent out yesterday regarding the change in spill operation at Little Goose Dam (LGS) from 30% to a constant rate of 11kcfs. He noted that in accordance with the Fish Operations Plan (FOP) and previous years' operations coordinated with the TMT, the Corps changes the LGS spill operation from 30% to a constant spill rate of 7-11 kcfs when outflow is <=32 kcfs at LGS. The operation ensures the ability to maintain minimum operating pool (MOP) and FOP spill at other Snake River Projects during low flow periods. This criterion was achieved on Monday, June 15, when LGS day average outflows were 31.8 kcfs, and the NWRFC forecast showed a continued decline in the hydrograph. The Corps will continue spilling at LGS a constant 11 kcfs at LGS until river flow decreases to the point where a lower constant spill rate is required.

Additionally, Doug followed up on email notification sent out Monday (June 15) regarding MOP increase at LGS and Ice Harbor Dam. In accordance with the FOP these projects are currently operating at MOP + 0.5 ft. in order to provide safe navigation.

Fish: Paul Wagner, NOAA, reported on fish. For adults, the spring Chinook season is over with 220,480 passing Bonneville (167% of the ten year average). For Jacks, counts at Bonneville were low with 13,300 (56% of the ten year average). Summer Chinook numbers are better with 45,078 passing Bonneville so far. Sockeye numbers continue to climb at a rate of 4,000-7,000 per day , approaching 39,000 for the season. Adult Lamprey numbers are notable, with 4,795 counted at Bonneville thus far. At Lower Granite, spring Chinook counts were 104,200 (212% of the ten year average), Jack counts were 8,154 (72% of ten year average), the Jack numbers are far better at Lower Granite than Bonneville. A total of 13 Sockeye have passed Lower Granite. Spring Chinook counts at Priest Rapids are at 27,716 (176% of the ten year average), Jacks are at 1,578 (96% of the ten year average). Overall, spring Chinook numbers are strong and will likely do well next year based on Jack numbers. Sockeye counts are around 3,145, moving up river, but still early for heavy passage at Bonneville.

Yearling Chinook are done for the season. For sub-yearling, the peak occurred on June 5 at Lower Granite with counts at 100,000 and tapering down to 25,000, then to 7,000. The same trend is occurring at Little Goose, the past week saw 13,000-18,000 sub-yearlings per day, with a range of 5,000 for the week. McNary counts are at 38,000, with the peak occurring on June 12th at 49,000. Juvenile lamprey numbers are fair, with 100-500 at Little Goose, 100 at Lower Monumental, 2,800 at McNary, 1,000 at John Day and less than 100 at Bonneville.

Water Quality: Lisa Wright, COE-NWD, reported on water quality, noting that there were no exceedances in the last 4 to 5 days, with most Snake River projects already operating at minimum generation for some hours.

Power System: Tony Norris, BPA, requested Salmon Managers review the Power System Emergency Plan found on the TMT website and offer any operational changes for low flow years.

The next TMT meeting is a conference call on June 24th.

<u>Columbia River Regional Forum</u>
TECHNICAL MANAGEMENT TEAM—OFFICIAL MINUTES

June 17, 2015
Minutes: Pat Vivian

1, Introduction

Representatives of BPA, NOAA, the COE, CRITFC/Umatilla, Oregon, Washington, USFWS, Colville Tribe, BOR, Idaho and others participated in today's TMT meeting. Doug Baus, COE, chaired the discussion, with facilitation by Emily Plummer, DS Consulting. This summary is an official record of the proceedings, not a verbatim transcript.

2, Review Meeting Minutes – May 20, 27 and June 10

The May 20 and 27 meeting minutes and facilitator's summaries were approved as final. Review of the June 10 minutes and summaries was postponed to allow more time for review.

3. Treaty Fishing SOR 2015 C-5

Kyle Dittmer, CRITFC/Umatilla, presented this SOR, which calls for 1.5 ft operating range in the Bonneville, The Dalles and John Day pools for the first Tribal fisheries of summer. This week of fishing from June 16-19 is currently underway, with the COE providing the requested pool elevations. Dittmer said CRITFC's member Tribes appreciate how the COE keeps the pools full and stable during Tribal fisheries.

Based on recent catch data, the Tribes expect to fish again on June 22-25 and on June 29-July 2. The current run forecast is 68,000 summer Chinook adults returning to Bonneville Dam, as compared to the 2014 forecast of 64,000 adults. The 2015 sockeye forecast at 391,000 is way above average; last year's forecast was 345,000 sockeye.

On June 4, a CRITFC net flight found 294 nets in the three lower Columbia pools. Of these, 124 (42%) were in Bonneville pool, 59 (20%) in The Dalles pool, and 111 (38%) in the John Day pool. CRITFC sponsored another net survey as TMT met.

The Port of Hood River has requested that the Bonneville pool be kept low for recreational purposes starting July 2, Karl Kanbergs, COE, said. The COE will work with CRITFC on maintaining a steady pool operation over the 4th of July weekend.

Erick Van Dyke, Oregon, asked whether the Port's request was an SOR. No, because it falls within the range of typical short-term operations that the Action Agencies coordinate, Karl replied. Baus asked whether all three fisheries dates will remain the same when new catch data are available. In past years, TMT discussed fisheries in light of current conditions. Dittmer said the dates are about 90% likely to remain the same, and are provided for planning purposes. The COE will plan to implement the 1.5 ft operation at BON, TDA, and JDA for the

remaining fisheries, and CRITFC will keep the COE posted on any modifications to the fishing dates.

4. Dworshak and Lower Granite Water Temperature

Because temperatures in the Lower Granite tailwater have been within half a degree F from the 68 degrees F threshold, the COE has begun temperature augmentation from Dworshak Dam, Steve Hall, COE, reported. Current conditions and modeling through June 24 indicate that Lower Granite tailwater would exceed the temperature criteria later this week or this weekend if Dworshak flows were not increased today. So the COE raised Dworshak discharges from 3 kcfs to 5.3 kcfs by running unit 3 at full load.

Temperature modeling, linked to today's agenda, indicates the next few days will be cool, then temperatures will rise over the weekend. The COE is trying to conserve as much cool water as possible while still meeting its temperature management objectives. Daily modeling indicates that 5.3 kcfs releases should be sufficient to keep the Lower Granite tailwater beneath the 68 degrees F criteria. The COE will adjust operations as necessary.

Paul Wagner, NOAA, asked how far Dworshak is expected to draft throughout June. The reservoir elevation will probably be about 5 feet below full by end June, Hall replied. Charles Morrill, Washington, commented that Lower Granite tailwater is about 7 degrees C warmer throughout the entire water column compared to this time last year. Indeed, Hall affirmed, temperatures and streamflow conditions are generally happening about 2-3 weeks early. Joe Skalicky, USFWS, asked when the model speculates we'll run out of water if conditions are occurring 2-3 weeks early this year. The CEQUAL W-2 model doesn't go any farther than weather forecasts, Hall replied. Therefore the COE cannot provide specific temperatures. However, water volumes can be modeled based on historic flow years.

The COE is currently operating to keep Lower Granite tailwater temperatures at 66.5-67 degrees F in order to provide a bit of cushion through the end of July. Beyond that, Hall asked the Salmon Managers for feedback in defining the desired Dworshak operation. There are basically two choices:

- Maintain Lower Granite tailwater temperatures close to the 68 degrees F target and accept minor exceedances at the price of conserving water at Dworshak; or

- Maintain a cushion to minimize temperature exceedances at the cost of releasing more cool water from Dworshak now and possibly running out of flow augmentation before summer ends.

Either way, Hall said, TMT will have some hard decisions to make this coming August. It may be necessary to release flows that are typically reserved for September.

Charles Morrill, Washington, asked how much volume could potentially be saved by accepting small exceedances at Lower Granite. Citing the time limitations of CEQUAL W-2 modeling, Hall said it would be difficult to tie results to specific water temperatures.

Nevertheless, assumptions based on past experience indicate that 12-14 kcfs releases are needed in the hottest part of summer to keep Lower Granite tailwater temperatures below 68 degrees F. Releasing only 10 kcfs, for example, would result in a few degrees F increase in water temperatures, but would allow the water to be stretched further.

Russ Kiefer, Idaho, asked, how will lower inflows than normal affect this balancing act? Hall acknowledged inflows will be lower than normal. This year's operations will be similar to 2001 and 2005. The COE is using 2005 as an analog year in its modeling, although inflows are even lower this year. Joe Skalicky, USFWS, asked what the typical 90% passage date is for sockeye passing Lower Granite. That's usually by end July or early August, Kiefer replied, but this year it might be the end of July.

Several of the Salmon Managers present expressed their views of the current effort to maintain a temperature buffer at Lower Granite:

- **Idaho** – It's prudent to continue managing with a temperature buffer through the majority of adult sockeye migration upriver. Adult sockeye migration is critical to species survival. By mid to late July, in light of current weather forecast and streamflow information, it will be clearer how to manage river flows with the water volume still remaining at Dworshak. A balance will need to be struck between supporting early adult steelhead and other species. Idaho supports operating with a buffer now, while keeping close tabs on the available water supply and on fish movement.

- **NOAA** – Agrees with Idaho's assessment. Further discussion will take place at FPAC. Thanked the COE for keeping temperatures at Lower Granite under control.

- **USFWS** – Supports the current buffer operation unless something later suggests adverse effects TMT hadn't considered. As the next few weeks pass, TMT may decide to operate without a buffer to balance the effect of low flows on seasonal runs.

- **Washington** – This situation will need to be monitored closely.

It appears that TMT generally supports maintaining a temperature buffer at Lower Granite Dam to support adult sockeye passage, Baus concluded. The COE shares TMT's concerns about water conservation in this record low flow year and agrees with Idaho's assessment of using a temperature buffer now.

Hall gave an assessment of what the Dworshak operation might look like by end July if the current operation continues. Typically the reservoir is down 25-50 ft by end July, with an elevation of 1550-1575 ft. Baus wondered whether there will be any flows for TMT to manage adaptively after end July. The Salmon Managers might find it appropriate at some point to operate without a buffer, Skalicky said.

Kyle Dittmer commented that last year was a weak El Nino year, while this year is shaping up with a strong El Nino influence. There hasn't been a double El Nino sequence since the 1990s. CRITFC predicts a 90% chance the current El Nino trend will continue

through summer. While this summer isn't projected to have record-breaking heat spells, pre-existing warm temperatures over the winter warmed rivers and set the region up for problematic effects in terms of weather and water temperatures.

Sockeye passage hasn't been 2-3 weeks early as river conditions have been, Baus noted. Sockeye passage is picking up, Wagner said; 14 adult sockeye have passed Lower Granite. The run is about a week early. Approximately 285 Snake River sockeye have passed Bonneville to date based on PIT-tag expansions, Kiefer reported. The earliest date for 50% of the run passing Lower Granite was in 2005, the analog year for modeling, Skalicky said. By July 20, 2005, 95% of the run had already passed Granite.

Hall will continue to provide TMT with modeling results to aid in decision making. Until further notified, the COE will maintain a slight temperature buffer below 68 degrees F at Lower Granite tailwater. Based on 1977 inflows, which are the lowest on record, Dworshak will run 5.3 kcfs out through unit 3 until July 25, then increase flows to 7.5 kcfs through the July 4 weekend. Hall estimated this operation could take the Dworshak reservoir elevation 5 ft lower by the end of June, and ending July at approximately 1555 ft. If the project goes to full powerhouse flows in August, the available augmentation could be exhausted by August 18 when Dworshak reaches its minimum elevation of 1535 ft.

5. Operations Review

5a. Reservoirs. Hungry Horse is at elevation 3549.59 ft, discharging 2.5 kcfs with inflows of 3.7 kcfs. Grand Coulee is at elevation 1273.1 ft and continues to fill.

Libby is at elevation 2440.2 ft with inflows of 17.4 kcfs, discharging 12 kcfs. Albeni Falls is at elevation 2062.2 ft with inflows of 26.8 kcfs, discharging 26.3 kcfs.
Dworshak is at elevation 1599.6 ft with inflows of 2.4 kcfs, discharging 3 kcfs.

Lower Granite average outflows are 35.4 kcfs. McNary average outflows are 173.7 kcfs. Bonneville average outflows are 172.3 kcfs.

Baus gave updates on reservoir operations at Lower Granite, Ice Harbor and Little Goose. TMT was notified via email earlier this week that Little Goose and Ice Harbor are operating at MOP+0.5 ft for navigation safety, due to low flows. The COE also notified TMT that Little Goose can no longer hold 30% spill and is stepping down to a constant 11 kcfs spill. This is consistent with previous years' Snake River operations coordinated with the TMT during low flow years as decribed in the FOP. Releases at Little Goose generally ramp down from 11 to 9 to 7 kcfs as inflows decrease. Wagner noted this phenomenon doesn't typically occur until mid-August. Last year, Little Goose didn't transition from 30% spill to 11 kcfs spill until mid-July, Baus recalled.

The COE will remove the spillway weir from Little Goose on June 18 as coordinated at FPOM, Lisa Wright reported. The weir is typically removed when flows at Goose drop below 35 kcfs.

5b. Fish. Paul Wagner, NOAA, reported. Adults: They are doing unusually well despite low flows. Spring Chinook season is over, with a final count of 220,480 at Bonneville Dam, which is 167% of the 10 year average. Spring Chinook jack returns aren't as strong, with a count of 13,300 that's only 56% of the 10 year average. Summer Chinook are doing well with 45,078 arrivals to date at Bonneville. Sockeye passage is starting early, with 4,000-7,000 passing Bonneville per day and a count of 39,000 sockeye to date for the season. The adult lamprey count at Bonneville is 4,795 to date.

At Lower Granite Dam, the adult spring Chinook count is 104,125 for the season, which is 212% of the 10 year average. The spring Chinook jack count is 8,154, which is 72% of the 10 year average (jacks did better at Lower Granite this year than at Bonneville). To date, 13 adult sockeye have arrived at Lower Granite.

At Priest Rapids Dam, the spring Chinook count to date is 27,716, which is 176% of the 10 year average. Jack counts are 1578, which is 96% of the 10 year average. So far, 3,154 adult sockeye have arrived at Priest Rapids.

Smolts: Yearling Chinook passage is done for the season. Subyearling passage peaked at Lower Granite Dam on June 5 at 100,000, tapering down to 25,000 per day for the past few days, then dropping down to a 7,000 daily index count. Passage at Little Goose is following the same trend, peaking at 18,000 and dropping to 13,000 per day over the past week. Subyearling passage peaked at 23,000 at Lower Monumental, with counts of around 5,000 per day over the past week. Passage at McNary is 38,000 per day, with a peak of 49,000 on June 12. Wagner noted that subyearling passage usually peaks around the end of June.

Juvenile lamprey are passing Little Goose Dam at the rate of 100-500 per day. At Lower Monumental, 100 lamprey pass per day, while 200-800 pass per day at McNary. Juvenile lamprey passage at John Day is up to 1,000 per day, but less than 100 per day at Bonneville.

5c. Water Quality. There have been no exceedances for the past 4-5 days, Wright reported. With flows low and the Snake River projects on minimum generation much of the time, TDG levels are generally low throughout the system.

5d. Power. Norris requested that the Salmon Managers review the Power System Emergency Action Plan, which is part of TMT's emergency protocols, and let BPA know if any changes are needed. The plan is available under the Water Management Plan link on the TMT web page.

6. Next TMT Meeting

TMT will meet next in a June 24 conference call. The COE will provide updated modeling on Dworshak operations.

Name	***Affiliation***
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Paul Wagner	NOAA

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